Massachusetts: Commission report on condition and education of persons with seriously defective eyesight.

January 1914.

House No. 2145

REPORT

OF THE

MASSACHUSETTS COMMISSION FOR THE BLIND

ON THE

CONDITION AND EDUCATION OF PERSONS WITH SERIOUSLY DEFECTIVE EYESIGHT.

JANUARY 10, 1914.

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The Commonwealth of Massachusetts.

Chapter 97, Acts and Resolves of 1913.

Resolve to provide for a Report on the Condition and Education of Persons with Seriously Defective Vision.

Resolved, That the Massachusetts commission for the blind investigate the condition of persons in this commonwealth with seriously defective vision who are not now provided for either by any school or by the Massachusetts commission for the blind. The commission shall consider how the condition of such persons may be improved by providing them with instruction in a business and training institute for persons with defective vision. The commission shall report to the general court the result of its investigation, with such recommendations for legislation, if any, as it may deem expedient, on or before January tenth, in the year nineteen hundred and fourteen. [*Approved May 27, 1913.*

CONDITION AND EDUCATION OF PERSONS WITH SERIOUSLY DEFECTIVE EYESIGHT.

To the Honorable the Senate and the House of Representatives.

In accordance with the requirements of chapter 97 of the Acts and Resolves of 1913, the Massachusetts Commission for the Blind begs leave to submit the following report on the condition and education of persons with seriously defective eyesight.

Introduction.

While it has not been possible in seven months to outline the size of the defective eyesight problem in this State, it has been possible to make a study of conditions which helps to define the need, and gives a basis for recommendations, both for action and for further study. This report includes sections on the following points: —

Means of Study.
Definition of Defective Eyesight.
Difficulties of Investigation.
General Reports from Eye Clinics and Schools.
Needs shown by Study of Individual Children's Cases.
What can be done for Such Children: —
(*a*) By School Ophthalmologists.
(*b*) By Special Classes in Public Schools.
Needs shown by Study of Individual Cases of Adults.
Vocational Study and Guidance for Adults.
Recommendations.
Appendix.

Means of Study.

In studying conditions the commission has had, on full time for four months and on part time for three months, a special worker of wide, practical experience in non-medical work for prevention of blindness and in questions of industry and employment, who has worked in co-operation with the agent for conservation of eyesight.

From June 1, 1913, to Jan. 1, 1914, inquiries have been pursued, as follows: —

1. Inquiry through hospitals, ophthalmologists and school superintendents in Boston, Worcester, Springfield, Lawrence, Lowell, Fall River and New Bedford. Inquiry as to the experience of the Perkins Institution for the Blind, the School for the Feeble-minded at Waverley, the State Board of Minor Wards, the Boston City Institutions Department, the State Board of Education, the State Industrial School, the Concord Reformatory, the Industrial Accident Board, the King's Chapel Bureau for the Handicapped, the Commission for the Blind and others.

2. Study of cases of defective sight as found through these various institutions and individuals.

3. Inquiry as to the problem and methods of solution in London, New York, Milwaukee and Cleveland.

Definition of Defective Eyesight.

The workers, in consultation with ophthalmologists, have interpreted defective eyesight to mean vision from about one-third to one-tenth of normal with the best glasses obtainable.

Difficulties of the Investigation.

To give close estimates of the total number of adults or of children with seriously defective sight, who are known to require special vocational guidance or special schooling, is not yet possible. The defect is not obvious, as in the case of blindness, and men, women and children vary widely in their ability to "get on" with a small fraction of sight. To make sure of the actual condition and needs it would be necessary to secure: —

In all cases expert advice as to vision.

In some cases expert advice as to other physical handicaps, mentality, etc.

In all cases advice from some one fitted to judge what may fairly be expected of an individual with this limited degree of vision.

In the short time allowed this has been possible to determine in only a limited number of cases, the report of the special

worker being based upon a study of 256 children, — of whom 140 proved to be candidates for special training, — and of 100 adults, notably those who have been sufficiently hard pressed for employment to come to the attention of special organizations like the Commission for the Blind and agencies for the handicapped.

It should be noted, also, that children's cases could be studied to much greater advantage in the winter months after the school eye tests are concluded in February, and that the inquiry concerning adults should be pressed during the winter months rather than in the vacation period, and should cover a much longer period.

General Reports from Eye Clinics and Schools.

From study of a year's records at the Eye and Ear Infirmary, and from a group of special reports from public schools, much general information has been secured which does not determine the numbers actually helpable, but is some index of the widespread and serious need.

1. *Study of Eye and Ear Infirmary Records for One Year.*[1]

Among 19,877 patients treated at the Massachusetts Charitable Eye and Ear Infirmary between Sept. 1, 1912, and Sept. 1, 1913, 861 had seriously defective vision. Of these, 861, 75 per cent., or a total of 645, were between the ages of five and sixty-five, and therefore present presumably a problem either of industry or of education.

While some of these patients will ultimately be blind, not all are permanently handicapped. Among the 468 of industrial age (from sixteen to sixty-five), some 25 per cent. suffer from cataract, — a disease likely to cause practical blindness for a considerable period, yet so far relieved by operation that most cataract patients should secure a fair degree of vision. On the whole, however, the figures suggest that the educational and industrial problems of defective eyesight are not only serious but large.

The 177 children of school age suffer from a variety of diseases and defects. Some 31 per cent. of them, for example,

[1] See also appendix, page 25.

suffer from hypermetropia, or farsightedness, — a defect not easily recognized by teachers; they suffer from it, moreover, to a degree not sufficiently compensated by glasses. These and approximately 10 per cent. of seriously shortsighted, or myopic, pupils might many of them be educated in the same classes as their visually normal fellows if they could be provided with reprints of their school books in sufficiently large type. On the other hand, some 34 per cent., handicapped either by the effects of congenital syphilis (23 per cent.) or by congenital cataract (11 per cent.), would probably require, for greater or less periods, books printed in Braille to be read by touch.

2. *School Studies.*

In approaching the study as affecting the schools, it has not been necessary to establish the existence of the problem, as it has long been recognized in the experience of educators.

In trying to arrive at the number in the school population who need special methods of education, we meet a different problem because of the fact that medical inspection is not yet carried far enough to answer the question. Given expert care, many children, helpable by glasses, would not be candidates for special classes, as in their present neglected state they appear to be. On the other hand, many children may be suffering for special education because their eye troubles are not properly gauged by the teacher who makes the examination, or even by the general physician.

The hopeless confusion of present school statistics, even those gathered by teachers keenly aware of the defective eyesight problem but helpless before it, may be judged from the following reports: —

1. School A.

Principal's findings: —

Total examined,	1,615
Defective vision without glass ($\frac{1}{2}$ or less),	393
Defective with glass,	62
Total defective,	455
Defective to point $\frac{2}{5}$ or less,	192
Very low vision, as $\frac{1}{5}$, $\frac{1}{6}$, $\frac{1}{8}$,	31

To determine in a short school year how many of these 393 pupils can be helped by glasses is a task quite beyond the present equipment of this school, which provides one school nurse for 1,700 children.

2. School B.

The ophthalmologist reporting on his examination of a school in a Massachusetts town, states: —

"I examined the fourth, fifth and part of the seventh grades, — a total of 73 children. I found 20 of this number unable to satisfactorily read the test type, making nearly 28 per cent. who gave evidence of defective eyesight. Two of the 20 were already wearing glasses. . . . I think it is important to mention that although 20 children were found who were unable to satisfactorily read the test type, this does not mean that these 20 children will have to wear glasses. They should be advised, however, to have their eyes examined by an eye specialist. It may be the means of making a child who has always been dull, bright; of restoring to sight an eye going blind from disease. It may improve the general health and comfort of the child, and thus give it an equal opportunity with the one who has been more fortunate in having normal vision."

3. School C.

The principal of a school of 900 reports that of 600 pupils enrolled last year, 129 had defective sight; the year before, 184. In this city there are for all schools one school nurse and one attendance officer.

Pediculosis alone takes up a large amount of the time of the nurse, and only if something is unusually wrong does the attendance officer or the nurse find it possible to steer a child to the hospital. Notices are sent to the parents, but the matter usually rests there, so that no one knows how many of the 129 children are candidates for a special class and how many are not.

The principal of this school also reports that one of his buildings has no means of artificial light, and that at 3 o'clock in the winter, "school might as well not be," it is so dark. In this instance it is a question whether the school plant is not contributing to eye disablement.

4. School D.

The principal reports that out of 185 pupils 7 have vision so defective that the principal considers it cruelty to the children, and an imposition upon the school, to keep them at ordinary class work. Yet not one of these children has ever had an expert examination of the eyes. In addition to these 7 there are many other children with less serious defects who should be examined, to determine whether glasses may help. This school is one of 29 in a manufacturing city of 86,000 people, which provides 1 school nurse for 29 schools. There is no eye clinic in the city, and only 5 physicians make a specialty of diseases of the eye.

5. School E.

Of the same city. The principal reports 45 of her pupils as needing an examination of the eyes, to determine whether glasses can help. She has hesitated to urge the matter too far, fearing that those who cannot afford to pay an oculist may go to an inexpert optician and be in a worse state than before. She reports excellent results for the school during two years, in which the city made an appropriation for the examination of school children by an oculist.

Needs Shown by Study of Individual Children's Cases.

In the study of individual school cases the subject has been approached from three points of view, — the physician's, the educator's and the parents'.

From the physician's point of view the healthy child with vision of about one-third may be expected to have difficulty in keeping up with the normal school group, while a less serious defect may handicap the frail or nervous child. There is always the possibility of injury to the remaining sight by ordinary school work, and of injury to the general health by overwork in the attempt to keep up with the class.

From the educator's point of view it is impossible for the child to receive in the ordinary large class the extra attention that he needs. The child is discouraged with always being behind his fellow students, and develops a consequent carelessness, shiftlessness and loss of confidence. Later, his lack of the fundamentals in education, and the shiftless habits acquired in a desultory school course, must inevitably complicate his industrial handicap.

The point of view of the parent is naturally a purely practical one. Injury to the eyes or health is too remote for the majority to appreciate, and the child himself rarely complains of any handicap; he merely accepts. The parents ask only that the children be given the ordinary school training that will fit them for work, — the ways and means they leave to the school.

Among 265 cases gathered in the course of the study, all with seriously defective sight, only 140 were found to need the special consideration of a class for defective sight.

These children may be divided into two groups, — those with vision defective only to the point where ordinary school work

means overstrain or desultory education, and those whose defect in vision places them on the borderline between the blind and the seeing.

The first group is being educated in the regular classes of the public school more or less successfully.

A few of the second group, with courage and mentality above the normal, are receiving an education in the public schools under a tremendous strain, though it is inconceivable that they will be able to make a living as seeing persons. The great majority of the second group, however, are receiving no education whatever, as the public school is out of the question for them, and the parents are not willing that they should be educated as blind children.

It was largely for this group that the Commission for the Blind provided a field worker for children three years ago, with the aim of securing an education for every educable child, who because of total or partial blindness could not attend the public school. A review of this worker's experience shows a vast amount of work with relatively small results, largely because the State could offer no other special educational opportunity than the Perkins School for the Blind.

From the point of view of mentality the school cases may be again divided into two groups, — those of normal mentality, requiring special educational methods, and those below normal who should have special methods if they are to remain in the public school (none of this group is markedly below normal).

The study further shows: —

1. Many of these pupils who need not have been so handicapped if proper treatment had been given at the time it was needed.

2. Some who would need special methods of education only for varying periods, during the process of a long-continued treatment, as in the case of congenital cataract, where treatment often covers several years.

3. Two small groups having similar defects in vision. One having mentality above normal is quite independent of the eye handicap. The other, of only average mentality, feels the handicap.

4. A group in which teachers and others interested are unable

to determine whether or not the children are mentally defective because of the complication of defective vision.

5. A group having other physical handicaps, as well as defective vision, such as deafness, poor general condition, etc.

6. A group receiving more or less education in public schools, yet incapable of making a living as seeing persons.

7. A group whom the teachers find handicapped in school, yet for whom no correction by eyeglasses has been attempted.

8. A group with seriously defective vision who are continuing their education in high schools without medical advice as to how they should conserve their vision and health.

What can be done by Ophthalmologists.

The school studies already quoted, and the study of cases in which expert advice and medical help have actually been secured, show that even a beginning cannot adequately be made in this field without the aid of the ophthalmologist. This has been recognized and acted upon here in Massachusetts by a private organization in the case of one town; for two years by the school authorities in one manufacturing city, and possibly in other towns not reported; but the most notable instances we have to report are from Milwaukee, New York and London, where provision for expert advice and supervision has been made a part of the system of special education for children with defective sight.

1. *Plan for an Eye Clinic in a Massachusetts Town.* — As a result of the school study for one town already reported, it is announced that the Civic Association will open an eye clinic which, with the co-operation of the school department, may be expected to lead to thorough expert examination of the eyes of school children.

2. *Ophthalmologists in Milwaukee Public Schools.* — The supervisor of the department for defective vision in the Milwaukee schools reports: —

> Shortly after we opened our day school for the blind in 1907, occasional reports came to me regarding children with very defective vision. Upon investigation I found that immediate and constant medical attention was all that was necessary to save the sight of many of these. At that time we only kept records of the children in our department, so I cannot enumer-

ate the number given personal attention and sent back into the schools capable of continuing their regular class work. Through the generosity of oculists, I secured free treatment in almost every case, and finally, after the medical department was installed, the school nurses joined me in my work.

3. *School Eye Clinics in New York City.* — A visit to one of the seven board of health eye clinics indicates that the number of children whose eyesight makes it desirable for them to receive a different education from that of the ordinary public school classes must be very large. The paid ophthalmologist in charge of this clinic stated that 2,400 children had been examined since January 1. In going over a couple of hundred cards with him several cases were immediately found where high myopia or high degrees of hypermetropia, only partially corrected by glasses, indicated that the children in question required some special form of education. This physician also stated that he saw a great number of children in the clinic with eyes seriously scarred as a result of phlyctenular keratitis, and that many of these children had such low vision that the ordinary school work would be difficult or impossible. He was of the opinion that all children should be examined by an ophthalmologist when entering school, and that special children should be examined periodically thereafter.

4. *Ophthalmologists in London Schools.*

Method of Selection of Cases.[1]

One afternoon each week, at a certain place in London, 20 children who are reported by the hospital doctor, the school doctor, or other authority, as suffering from serious defect of vision are brought for examination. Each child is examined, note made of the state of the eyes and such vision as may be present, and some decision arrived at as to what education is possible for each child. Some are returned to the ordinary school as capable of receiving the regular education. Others are graded for various degrees of exemption, or special treatment, up to the admission to the blind schools: —

(1) Elementary school for easy treatment as regards eye work.
(2) Elementary school for oral teaching only.
(3) Myope class.
(4) School for the blind and partially blind.

[1] From "The Education of High Myopes," by N. Bishop Harman, F.R.C.S., "The Braille Review," September, 1913.

Many are invalided temporarily for treatment, some are transferred to country homes, but the majority fit into one or other of the four classes named above. Each case is considered on its merits, and many conditions besides eyesight influence the decision arrived at, *e.g.*, the age of the child, whether one or both eyes are affected, the nature and degree of the affection, the possibility of amelioration or aggravation during school age, the possible effects of school attendance and work, the possible educational advantage of a change of régime, — it may be both at home and at school, — and lastly, in the case of the blind and partially blind, the most suitable school for the particular child in the knowledge of his or her age and capability.

What can be done through Defective Eyesight Classes in Public Schools.

1. *The Defective Eyesight Class in the City of Boston.* — On April 3, 1913, the Boston school committee opened a class for children with defective eyesight in the Thornton Street School, Dillaway district, Roxbury. There being no instructor with the precise experience required, a teacher who had proved herself capable and resourceful, alike with the blind and with other handicapped children, was obtained from the Perkins Institution. In special preparation this teacher made various teaching material, such as fonts of heavy black letters gummed on to individual cards, and large maps having coarse outlines and States or countries in color. She collected numerous busy-work appliances and materials, like desk looms, spool knitters, wooden knitting needles, wool, reed, cane, etc., for her appeal was to be through the eye and hand as well as through the ear. (See cut on opposite page.)

The room assigned was a good one for the purpose, large, well-lighted, with desks and chairs mounted on movable platforms, and especially with ample blackboard space. The class opened with 5 children of various degrees of defective sight. By June there were 7, with a total registration of 9. The teaching has been necessarily individual, each child being dealt with according to its defect and advancement. Superintendent of Schools Dyer says of this class in his annual report for 1913, page 54: "The progress made by the children to whom school had meant almost nothing has been remarkable, showing that the effort is well worth while if the children can be reached."

CITY OF BOSTON.—CLASS FOR CHILDREN WITH SERIOUSLY DEFECTIVE SIGHT.

Note in foreground convertible desk-blackboard made after London myopic class model. Note, also, movable desks ; hand training through various

After the long vacation this class opened auspiciously with 10 eager boys and girls, with additional didactic material and with the favorable comment of the parents and of competent visitors.

But the experiment still lacks one fundamental essential, — that of provision for periodical expert examination of the children's eyes, done with a view to determining how far the individual pupil may use or continue to use his eyes at school. As it is, a responsibility is put upon the teacher which she should not bear, and but for advice secured through eye clinics and through the free services of a busy ophthalmologist, this neglect might seriously have affected the results thus far obtained.

2. *Defective Eyesight Classes in New York City.* — In New York City it has recently been decided so to extend the plan for educating the blind in the public schools as to include children with defective sight. This plan will be greatly facilitated by the school eye clinic organization already described.

3. *Defective Eyesight in Milwaukee Schools.*[1] — In Milwaukee the teaching of children with defective eyesight in the public schools is being developed in association with the teaching of blind children begun in 1907. The supervisor of this work reports: —

> We use different methods for each individual, for the children must be under observation at all times and judged as to the amount of board work they can do without ill effects. We have had to teach Braille at first in nearly every case, not for the purpose of reading but for writing, thereby relieving the strain. This does so much to improve the child's condition that we are often able to drop the Braille within a few months.

The supervisor cites the following instance: A was twelve years of age, and the entire time she had previously spent in school amounted to eight months. The doctor analyzed it as a case of phlyctenular keratitis which in a month would have resulted in total loss of vision. A has been in our department three years, and is now able to use the regular school readers.

4. *London Classes.* — The London myopic classes are notable in having an experience with more than 300 children to report upon and in being thoroughly and delightfully reported upon by

[1] See also appendix, page 27, for "Class for Conservation of Vision in Cleveland."

Dr. Harman. The following quotations, selected to bring out the demand for the class, and the conclusions from three years' experience are made from his article published in "The Braille Review" for September, 1913. For further quotations see appendix, page 30.

The Education of High Myopes.[1]

The demand for some scheme of education suitable for children suffering from a defect of vision is a very natural one. It is bound to arrive because no one scheme of education will cover all cases. The curriculum of any school is designed for the greatest good of the greatest number. Misfits must suffer, either because they are incapable of taking advantage of the education provided, or else because the scheme would be injurious to them if their full attendance were insisted upon. This was early recognized in the case of the blind, and special forms of education were provided for them, and in the case of elementary school children extra grants were given by the State to meet the additional cost of their special educational needs. The difficulty became acute in the case of those who had serious defect of vision and yet were not blind and not likely to become blind. When such cases came to the ophthalmic surgeon he very rightly objected to the attendance of these defective children at the ordinary school; it was not right to subject them to the strain involved. In the end the children either were exempt from school altogether, or they were drafted into the schools for the blind and partially blind, under the definition given in the act providing for these schools. Neither of these alternatives was satisfactory.

In the first case the child loafed about the streets, or became the household drudge, and the more intelligent of them took their lessons from their normally sighted colleagues, and read without restraint under the worst conditions; indeed, the very aim of exemption from school was defeated. Further, it must be recognized that the denial of the communal life of the modern school was a real loss to the children, and one that was recognized by the children themselves. In the second case the admission to the blind school had its own drawbacks. The children had to associate with the blind, and do the work of the blind, yet they themselves were sighted children, and for the most part not likely to become blind, certainly not in school years. The work they learned was waste of effort and utterly useless. Teaching Braille to a shortsighted child is misplaced energy of the worst kind, for the child will not read it with its fingers, but the instant the teacher's back is turned the child bends down its head to read with its eyes bare impressions on the paper, which are vastly more difficult to see than ordinary black print. Again, the labor was wasted, for no such child ever dreamed of reading the limited works of the Braille press after

[1] By N. Bishop Harman, F.R.C.S., ophthalmic surgeon, Belgrave Hospital for Children; assistant ophthalmic surgeon, West London Hospital; vice-dean of the Post Graduate College.

leaving school; if it wished to read, it read the books of the normal children of the household. Lastly, and this is the most serious matter for the children of the working classes, the child left school with the stigma of the blind school upon it, and in these days of employers' liability acts that is no light matter. When a child leaves school and applies for work it is the usual thing for the would-be employer to ask from what school the child comes, and the standard passed; the mention of blind schools is sufficient to terminate the interview, for who will run the risk that the employment of the bad sighted entails? . . . In conclusion, the lessons of the experimental establishment of these classes and their extended working are that a suitable system of teaching myopes can be arranged and carried out successfully; that such classes should never be independent units, nor be associated with existing blind schools, but be formed as integral parts of existing elementary schools; that their success depends almost wholly on the intelligence and initiative of the teachers, who have to do real teaching and not merely to act as a pedagogue to lead the child to the school book; that the training for these children should be general and not merely technical; that classes for these children should be of small size, with an optimum number for each teacher of a dozen, but never more than a score; that there must be a standard of visual acuity of six-eighteenths vision for the children successfully to take a share in the work and that the children must be under regular individual supervision during the whole of their school life.

Needs shown by Study of Individual Cases of Adults.

The investigation on the industrial side of this study has covered a group of 100 cases whose history and experience may be pertinent to the inquiry. The degree of vision was one-fourth normal in a few instances, one-fifth or less in most cases. This group was at first roughly divided into two, — those always handicapped, first in school, later in work, and those whose vision failed during the industrial period. It is difficult to judge which group faces the greater handicap. It would seem that those who lose vision relatively late in life would feel it the more in that they must learn to do without, after depending so long upon vision. But these at least have had the advantage of the ordinary school training with all that this implies, and the added training that comes with many years of regular work. Their greatest difficulty appears to be the slow realization that loss of vision means loss of wage-earning capacity.

One of the significant facts brought out in the study is the importance of school training, mental and disciplinary, and

illustrated in a comparison of a small group of successful Perkins School graduates who are only partially blind, with a similar group of unsuccessful men whose vision is approximately the same, but who have had little or no education, as their vision precluded the work of the ordinary school and their parents refused to consider education with the blind.

The kinds of work represented are more varied than one would expect, until it is remembered that here as elsewhere the choice of work and success or failure is largely a matter of personal equation.

Among the women *housework* is naturally the work most frequently chosen, and is that in which the worker shows least strain. Domestics with one-tenth normal vision reported that they had never felt any strain in their work, and most did not, at least consciously, choose the work because of the low vision. In four cases where this answer was given the girls had never attended school. Rough factory work that requires little vision is next in the list of occupations for women, but this is apparently very limited in amount and very poorly paid. The wages of three women employed in this way are given as $3, $4 and $5 a week. Two girls are employed in doctors' offices, attending to doorbell and telephone. Two women, one an accountant the other a bookkeeper, are now employed as switchboard operators, both with the firm by which they were employed before sight failed. Among the other kinds of women's employment are stenographers, general clerk, hospital ward maid, waitress in small restaurant, nursery maid, actress, public entertainer.

Among the men and boys the varieties of workers were many: bootblack, canvassers, drivers of heavy, slow-moving teams, or helpers on ice teams, factory employees at rough work, farm laborer, hostler, janitor's helper, laborers, street or building, operator of vacuum cleaner, piano tuners, proprietor of chicken farm, section foreman, small storekeepers, waiter in small restaurant, workers at odd jobs about grocery store.

Two men were able to follow their regular trades of leather sorter and machinist's helper even after their vision failed. Two brothers showed unusual wisdom in the selection of their work: one is a peddler of wood and has no trouble in driving

an old horse through residential districts; the other is an elevator starter in a large office building. One man, who has apparently done the work of three ordinary men, is earning a good salary by orchestral work in the evening. This man was born with congenital cataract, and from his sixth to his twelfth year was educated by special methods, while his eyes were under treatment. At twelve, the sight of one eye had been improved almost to normal, and he entered a public school. At sixteen, in his second year in high school, he met with an accident which totally destroyed the vision of the good eye, leaving him only the very imperfect vision of the poorer eye. Forced to leave school he went to work as a clerk, but took up the study of shorthand and typewriting, taking his notes in large characters and later reading them by means of a powerful reading glass. When added responsibilities called for a larger income, he worked evenings again, this time as a student of music, and later started his orchestra, now a success for some years. He has done all this with vision so low that it would be a permanent handicap to many men.

Eleven still in the process of readjustment had no work.

To arrive at numbers in the case of adults is only less difficult than to settle upon some form of work peculiarly adapted to their needs. Inquiry among the oculists of the State brought very few names, largely because the specialist does not, as a rule, know very much about the social condition of his patient, and the question as to how many of his patients are industrially handicapped because of defective sight was usually a new one to him. Inquiry through the hospitals contributed many other instances of vision so low that a serious industrial handicap might be expected, but frequently these individuals could not be traced, or when found presented such a variety of conditions and experiences as to confuse the problem rather than to illumine it. The personal equation here as elsewhere is so large a factor that a loss of vision which totally disables one man may have little or no effect industrially upon another, and a man's point of view may handicap him more seriously than any physical defect. Vision that handicaps in one trade may have little effect in another.

Some who have been handicapped all their lives have never

found the kind of work suited to them, while others have always been self-supporting. Some who have suffered loss of vision comparatively late have had the good fortune to find just the right work from the start, or to have had always a variety of work not requiring close use of the eyes. Others forced to give up well-paid work may have a cruelly hard experience in their attempt at readjustment. A man with seriously defective vision able to compete with the normal group is either lucky above the average or has ability and courage above normal, while the man not able to readjust himself industrially may be simply unfortunate or have only average ability and courage.

The experience of such men who have applied to the Commission for the Blind in the last few years has furnished the best material for the study of this form of physical handicap. Following are a few examples: —

A, a man of thirty-seven, who applied to the commission recently for help in securing some kind of work that would make it possible to support his wife and two children. He had earned very good wages as a driver of a laundry team up to six years ago, when his vision failed to the point where such driving was unsafe. He then took a small farm, but as he knew nothing of farming, naturally failed, though he gave it a trial for four years. He next tried buying and selling eggs, and met failure because he had no capital. Here was a man of ability and courage, who was unfortunate in choosing first a work for which he was wholly unfitted and then a business requiring capital, when he had no capital.

B, a man who had to give up his work as an engineer at the age of twenty-seven, and for more than seven years remained idle, his courage having failed even more than his vision. Yet for some years now this man has held a job secured for him by the commission — a modification of his old work — as furnace tender and janitor, and is doing practically the work of a seeing person.

C, thirty-four years old, whose work while he had full sight was that of a teamster and who has been a hard drinker. He still has considerable useful vision and should be able to do certain forms of unskilled work, yet, though he needs it very badly, he has given up the work found for him, — the simplest kind of work in a factory.

In securing capital for A the commission has had to furnish only one item in the requisites for success in his work, and that by no means the most important one. In securing work for B the commission again had to give only the opportunity that restored lost courage, — the man had plenty of ability

and the will to do. But in the case of C it is doubtful if any work can be found for him while he still lacks the will to do his share.

Reports from Other Agencies on Employment of Adults with Defective Sight.

The State Free Employment Bureau reports that applications for work from those handicapped in sight average about *1* a *week*, as against 6 or 7 a *day* of other kinds of handicap (including the "moral handicap" of discharged prisoners). The Bureau has never had the time to work out any special plan for these. The State Board of Charity has been asked to pay the salary of a worker for the handicapped in this department.

The Industrial Aid Society reports that there has been about one application a week from men handicapped by defective sight. No special kind of work has been considered as especially fitted for that group. In the women's department this form of handicap has not been noted, possibly because the only form of work asked for or offered is housework, where such a handicap would give relatively little trouble.

The Free Employment Bureau of the Federated Jewish Charities does not recall having ever had applications from persons so handicapped.

The King's Chapel Committee for the Handicapped reports 11 such cases referred in a period of one year, — 4 men and 7 women. Three of the women were educated at Perkins School, and two had vision so low that it seems almost impossible that work could be found for them among the seeing; yet both held the positions secured for them in light household service and were happy in their work. Success or failure in their work was apparently due in each of the 11 cases to qualities of personality.

Vocational Study and Guidance for Adults.

The needs of adults with defective vision is not one which can be met by the establishment of a business and training institute alone. Much more study and practical experiment will be necessary before it is clear whether such an institute would, to any considerable extent, relieve the situation. In-

dications up to this point are that suitable early education would fit many persons with defective eyesight to compete with persons with normal sight, without further aid. Others may need vocational guidance, the basis for which can be secured only by further study and experiment. The establishment of an institute at this time seems unwise as, of the numbers so far thoroughly known, no two seem to be fitted for work which would require similar training. It seems probable, too, that training for appropriate occupations for persons with defective eyesight may well be secured in connection with existing institutions, provision being made for such readers, clerical assistance, special books or other equipment as may be necessary in the individual case.

Summary.

The study of a single case of an adult with defective sight in straits for suitable employment almost invariably goes back to either or both the handicaps of (1) lack of early and adequate medical care of the eyes and (2) lack of early and suitable education. The problem has been constantly presenting itself to the Commission for the Blind in individual cases during the past seven years, and both in these cases and in the special study of this year it has been impossible to go into the subject in any satisfactory and practical way, except in relation to these two important sides of the question. It is practical at once for the Commission for the Blind, given the funds for special workers, to continue, case by case, vocational study and guidance for adults; but equally as important for the State is the matter of conservation of vision by more adequate provision for the care of the eyes of school children and by appropriate education. The energy of school children with seriously defective eyesight, now undirected and undisciplined, is without any doubt leading many towards the ranks of the unemployed and membership in institutions for the wayward. The adult who comes for industrial training and employment because of defective sight often has not only made an unwise choice of occupation, but has the added handicaps that come from lack of early training in good habits which the normal child gets at school, as well as the timidity and depression following repeated failures, and often the actual physical suffering from general

nervous strain and actual impairment of vision. He is really the result of a school system that persists in training every child through books and the one sense of sight, largely to the exclusion of training through other senses. He may not be *helpable now*, but he was *helpable once*. The accumulation of proof, through acquaintance with many cases, led the Commission for the Blind to urge upon the Boston school committee the importance of experiment in this direction, and the class begun about a year ago marks an important step in this direction. Vocational guidance must begin with early recognition of the defect, and appropriate education. The successes of persons so handicapped, when they have happened to be fortunate in early home training and in choice of occupation, give promise of satisfactory results if an effort is made to give appropriate training and guidance to all children of sound mentality who are physically handicapped in this way.

Recommendations.

As a result of the study made under authority of the Legislature of 1913, the commission recommends: —

1. That an appropriation of $2,500 be made for the salary and expenses of workers to continue the study of defective eyesight problems and the work of vocational guidance in individual cases of adults under the direction of the Commission for the Blind.

2. That an appropriation of $2,500 be made for an experiment in establishing defective eyesight classes in such city or cities of the State as will make an aggregate appropriation of equal amount, the said appropriation to be used for services of ophthalmologist, salary of special teacher, expenses of supervision and special equipment, the State Board of Education and the Commission for the Blind to supervise jointly the experiment.

Respectfully submitted,

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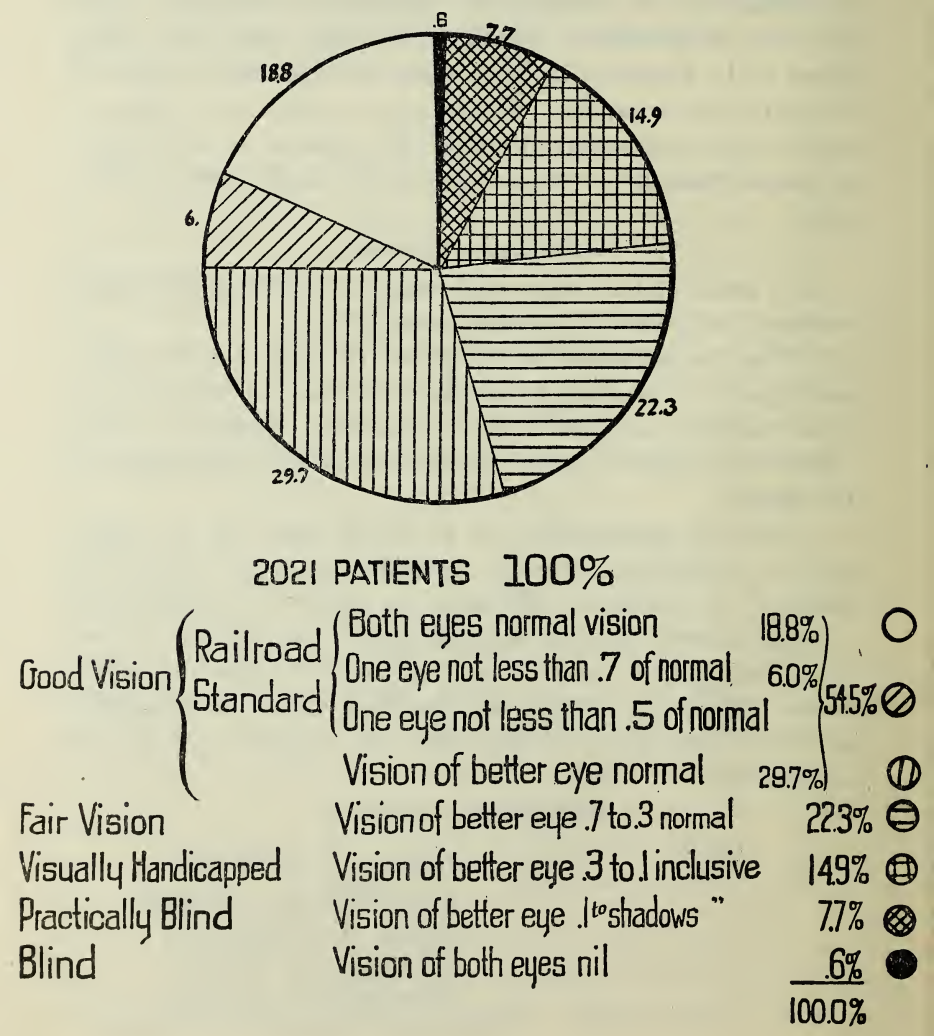
Massachusetts Commission for the Blind.

Appendix.

1. Estimated Number of Persons with Seriously Defective Eyesight.



The number of persons in Massachusetts with seriously defective eyesight may be approximately estimated as follows: —

A study[1] of 2,021 eye patients treated during two years in the wards of three Boston hospitals, shows that the number of patients with vision seriously impaired (from .3 to .1 of normal, inclusive) was far greater than the number of blind and practically blind (vision less than .1 normal). As indicated in the diagram, while 8.2 per cent. were blind or practically blind, 14.9 per cent. had seriously defective vision in even the better eye. If these relative proportions held good for all eye patients, those with seriously defective eyesight would be nearly twice (1.8) as numerous as those totally and practically blind; and in the State of Massachusetts we might estimate their number as 1.8 times the blind and practically blind; *i.e.*, 1.8 times 4,000, or some 7,000.

It must be remembered, however, that many persons with seriously defective eyesight due to increasing shortsightedness (progressive myopia), etc., and that many persons blind from chronic disease (such as optic atrophy), are treated, not in the wards of hospitals, but in clinics. Among out-patients, therefore, as contrasted with ward patients, the proportion of blind persons to those with seriously defective vision might be either larger or smaller. In our study of out-patient records at the Massachusetts Charitable Eye and Ear Infirmary the numbers of patients in each class have been compared.[2] The comparison indicates that patients with seriously defective eyesight are actually about 3.2 as many as the blind or practically blind. If this proportion holds good throughout the State we may therefore estimate the total number of persons in Massachusetts with seriously defective eyesight as about 3.2 times the practically blind, or about 13,000.

These estimates, — 7,000 and 13,000, — are, of course, very rough. And even if we accept the larger estimate as probable, we must remember that by no means all of these 13,000 persons would present either an educational or an industrial problem.

Judging from our figures for out-patients, about 2,500 (21 per cent.) would be of school age. The 7,000 (54 per cent.) or so of working age would be about half women and half men.

[1] Made, at the request of this commission, by the research department, Boston School for Social Workers, supported by the Russell Sage Foundation.

[2] Deducting 30 per cent. of the cataract cases as probably recovering a fair degree of vision.

Among about 3,500 handicapped women, of working age, some 1,500 (43 per cent.) would be married, and most of them engaged in housework, while about 875 (25 per cent.) would be gainfully employed; and among the men some 3,200 (92 per cent.) would apparently be at work.

Though relatively few persons of industrial age seem to be out of work because of low vision, many who are earning their living would benefit by industrial training or advice. The majority, drifting into work which requires little eyesight, are laborers, domestics, etc. As such they can safely shift for themselves. Others, however, — and how many they are can only be surmised, — are printers, tailors, teachers, seamstresses, etc. These may often require change of employment if their remaining eyesight is to be saved.

2. Method of the New York Classes.

In New York City both the blind children and those with seriously defective vision who are not classed as blind are educated in the regular public schools with the seeing children. In all but two subjects the work is done in the same classes, the blind and defective-eyesight children having the same lessons and using the same books. To make this possible all requisite books are specially printed in Braille and are taken home by the children for study. In the geography classes maps printed in raised lines are used. A special teacher serves as an intermediary between the blind and defective-sight children and the regular teachers, first teaching the children Braille and then serving as translator; for example, a blind child in the geography class writes the names of the principal products of each State on strips of paper in Braille, and pastes the strips onto her raised map. The special teacher then writes the names of the products on the map beside each strip of Braille, and the map is handed in to the regular teacher with the equivalent maps filled in in ordinary script by seeing children. The child's work is then criticized and marked on exactly the same basis as the work of the seeing children. In this way the blind and defective-sight children are kept in competition with the seeing children. By the help of a special playground teacher, moreover, they are kept in normal communication with the other children, even during recess.

3. Class for the Conservation of Vision in Cleveland, Ohio.

As a result of medical inspection in Cleveland certain children have been found who are partially blind or are suffering from some visual defect which is likely to lead to blindness if they continue at school under ordinary conditions. The defects present in such children may be classified under two headings: (1) opacities, and so forth, either congenital or the result of inflammation of the cornea or abnormalities of the lens; (2) progressive myopia, or short sight, a condition in which the axis of the eye gradually becomes longer. This lengthening is accompanied by stretching of the wall of the eyeball, and such children always run the risk of the inner and most important part of the wall of the eye, the retina or nerve layer, being torn away and blindness resulting. In class 1 the vision is permanently dim, and obviously special instruction in a very well-lighted classroom is desirable. In class 2 the children usually see fairly well, but ordinary school work favors progressive change and grave risk to vision. In the past such children have been referred to the department for the blind, but unless their work in the ordinary classroom was very seriously affected by their limited vision. no special provision for them has been made. The teacher has been notified of their condition and they have been kept under close observation. Those who seemed most handicapped have been enrolled in the class for the blind. They have been assigned to their proper grade room in the building and have received from the teacher of the blind such assistance as her time would permit. But we have long felt this to be little more than a makeshift. Every institution for the blind in the country contains a number of such children. There they are usually instructed as totally blind children. After long and persistent effort on the part of both teacher and pupil some facility in finger reading is acquired. This method of reading seldom becomes easy, and when left to themselves the pupils soon succumb to the temptation to read the Braille with their eyes. The effort to discern the raised white dots upon the white paper is, of

course, far more injurious to their eyes than is the reading of ordinary ink print. Such pupils after leaving school make little or no use of the knowledge of Braille, on which so much time and energy have been expended. With the aid of some sort of a magnifying glass they manage to do such reading and writing as are absolutely necessary.

There was opened at Waverley School this year what might be termed a class for the conservation of vision. A classroom was selected which has as nearly ideal lighting conditions as we could obtain. It has a north and east exposure, and the window space is equal to more than twenty per cent. of the floor space. Shades have been placed in the middle of the window as well as at the top, in order that the glare of the bright sunlight can be excluded without darkening the room unnecessarily. An illuminating engineer from the National Electric Lamp Association planned the artificial lighting. Glare has been reduced to a minimum by refinishing the woodwork and the desks with a mat surface, and the walls have been redecorated with calcimine, instead of paint, for the same reason. The ceiling and walls down to the picture molding are cream, from the picture molding to the blackboard are buff, from the chalk tray to the floor are a dark brown. A strip of blackboard extends across two sides of the room, and over this is hung blackboard cloth attached to curtain rollers, which may be drawn down at will to afford more blackboard space. Those assigned to this class are children not likely to become blind if placed under suitable conditions.

Their work may be divided into three phases: oral, written and manual. The oral work is done in the regular classroom, where they are assigned their own seats. Here they recite oral arithmetic, history, geography and language. This not only releases the special teacher that she may give attention to other children, but brings these pupils into competition with their fellow classmates. Written arithmetic, spelling and a limited amount of reading are done entirely upon the blackboard. In addition to the blackboard on the wall each pupil is provided with a blackboard attached to a rack on his desk. Pupils above the third grade are taught

to write on the typewriter, using the touch method. This enables them to do much of their written work without any eye strain whatever.

Some investigation has been made of the relative legibility of type faces. A font of thirty-six point "clear face heavy type" has been purchased, and some textbooks are to be prepared in this large type for the use of pupils to whom such reading will not be detrimental. The paper to be used in these textbooks is an unglazed book stock with a slightly yellowish cast. This kind of paper will eliminate glare, as well as the violet ray held to be injurious to weak eyes.

The manual training of these pupils is similar to that given in the other centers. Much emphasis is placed upon training these children to use their hands without looking closely at their work. A special teacher instructs them in sewing, following the same course as that pursued in teaching the totally blind. The room is equipped with a range, a sink with hot and cold water, and other cooking facilities. The girls are to be taught plain cooking and serving.

No one is admitted to this class except upon recommendation of the Ophthalmic Branch of the Medical Inspection Department. Children whose eyes show progressive decrease of vision even under the most favorable conditions and those whose vision cannot be improved above $\frac{1}{10}$ are referred to the classes for the blind, where they are taught to read with their fingers; but those having a myopic refraction error of not less than five diopters, and those having opacities of the cornea or abnormalities of the lens, whose vision cannot be improved above $\frac{6}{21}$ in either eye, are referred to the class for the conservation of vision. The teacher in charge receives definite advice from the eye specialist regarding the amount which each child may be permitted to use his eyes. The pupils are kept under close observation by the Medical Inspection Department, and every effort is made to build up their general health as well as to conserve their vision. The size of this class should be limited to about eight children if the most effective work is to be done. It is hoped, however, that after a few textbooks have been prepared, this number may be slightly increased.

Much good, it is hoped, will result from the work of such classes. Many children now bringing on conditions in their school work which will result in blindness in later life will be relieved from eye strain to such an extent that the defect may be largely corrected. This class will also enable many children to continue their studies who in the past have been obliged to withdraw from school, owing to temporary eye difficulties.

4. Method of London Classes.[1]

The Myope Class.

The first necessity for the successful establishment and working of such a class or school is that it shall be associated with an ordinary school for normal children. The myope class must be considered and worked as an integral part of this school. The reasons for this prime necessity are three: (1) a better scheme of work can be provided by this association; (2) to establish the class as a separate unit is to run the risk of the children leaving school with a special mark upon them; (3) parents naturally object to any suggestion of their children being marked out as belonging to a particular class of defective children, even though it may be for their good, and for this reason the attempts which have been made to copy the London experiment in the provinces by establishing myope classes within the existing blind schools have proved a failure. It cannot be too definitely insisted upon that the only possible means of making these classes a success is by associating them, both in their practical working and in their classification, with the ordinary schools; for that reason in London they are always spoken of as "classes" and never as "schools." The scheme of work laid down for these classes is as follows: —

(1) Oral teaching with the normal children, for such subjects as can be taught orally.

(2) Literary work, such as is necessary for the knowledge of the ordinary means of communication, to be learned without books, pens or paper, but by the use of blackboards and chalk, the writing to be done free-arm fashion.

(3) A very full use of every sort of handicraft that will develop attention, method and skill with the minimum use of the eyes.

After four years' experience with the experimental class, and the extended observation of the work in two other larger classes, it has been found quite possible to carry on the teaching of children in this manner, and the experience has shown that the scheme is not only a success, in that the condition of the eyes of the children under observation has remained as satisfactory as could be anticipated, but that it is a success from the attraction it presents to both teachers and pupils. Both enjoy it, notwithstanding that for one of these parties, the teachers, the method

[1] From "The Education of High Myopes," by N. Bishop Harman, F. R. C. S., "The Braille Review," September, 1913.

calls for a degree of alertness and constancy of effort that is not the rule in ordinary teaching. An essential difference in the basis of the teaching required under this scheme was early demonstrated. The teachers found themselves cut off from the regular stand-by of modern teaching, whether of normal children or the blind — the book. They could no longer hand over a textbook to the children; they had to give out something from themselves, and make their own conception of the lesson so definite that they could convey it to the child without adventitious aid other than the most primitive materials, — chalk and a wall. They had to do real teaching. It was, therefore, no cause for wonder that in the beginnings the teachers themselves had to be shown how to do things, and the readiness, intelligence and suggestiveness of their efforts, in face of the difficulties of the makeshift conditions of the initial experiment, have made it a success.

The Classroom.

The one necessity of a classroom for myopes is perfect natural illumination. The windows must be in such size in relation to the floor space that there is on an ordinary day at least 15 feet candle illumination on the wall opposite the window, and at a height of 4 feet from the floor. The windows should be on the left-hand side of the children's desks; windows on the right-hand side in addition to those on the left are permissible if the sills are at least 6 feet above the floor level; indeed such windows, or top lights, are an advantage in these rooms, on account of the amount of handicraft work done in them. Windows on several sides of the room are objectionable unless they are placed high up in the walls, for they limit the available wall space for blackboards.

Artificial lighting for these rooms is a negligible consideration. All work other than drill, oral lessons or games is suspended immediately artificial light is required.

No special equipment other than table and blackboard provision is required. The ordinary school desk is unsuitable, and a special desk [1] designed by myself has been in use since 1908. The first batch was made by the pupils at one of the deaf schools. The desk has proved satisfactory, and is now the ordinary equipment of these classes. It provides for each child a full-sized blackboard, suitably sloped and at a convenient height for sitting, and also a full-sized horizontal table for handiwork. It is convertible from one use to the other by merely lifting the board. Each room has fitted all around the walls a band of blackboard. The boards are fixed from 3 to 6 feet above the floor level, so that they are available for both teachers and pupils without adjustment, and none is provided. In one school where the wall space is limited the writing surface is increased by the provision of continuous sheets of dull "oiled-baize," or "American cloth," fixed onto parallel rollers fitted to the wall; the black cloth runs over these rollers like a huge jack towel and gives a very large surface.

[1] The myope desk is made by Messrs. Hammer of Charing Cross, London, W. C.

The use of a hall or a room clear of furniture is essential for the satisfactory working of these classes. Prolonged sitting or close work of any kind, even when it is so simple that it entails little use of the eyes, is bad for these children. For this reason none of the furniture of the ordinary classrooms occupied by them is fixed to the floor; the myope desks and chairs are easily moved to the walls and the floor space cleared. Further, a bare floor space permits of a variety of methods of teaching, both useful and attractive, which cannot be undertaken in an ordinary classroom.

The Size of the Separate Classes or Forms.

The myope class comprises many separate classes, grouping children of the several standards of attainment and age. Each of these separate classes has a teacher, not necessarily one for each class, for the arrangement of the time-table allows of an alternation of the work of the teacher. When one group of children is taking oral lessons with the normal-sighted in the ordinary school, the teacher will be employed in giving lessons requiring writing, arithmetic or manual work to another group. The number of children that any one teacher can deal with at the same time must of necessity be less than the same teacher could cope with in an ordinary school. Individual teaching is much more necessary for these children than for ordinary children, if only it be because there is the constant necessity of guarding against bad habits of stooping and peering at work. Further, the desk fitting — the combination black-board and table — takes up the room of an ordinary twin desk. Experience shows that the greatest number any teacher can deal with successfully in any class working at the same subject and at the same time is 20. But these conditions do not obtain at the present. The numbers of children are too small to afford such large groups of the same age and attainment, and in practice the teacher often has to run two separate classes, say of Standards III. and IV., at the same time. Under these conditions 20 is too large a number. Twelve would be the optimum number. With that number of children the teacher should be able to give to each child a fair share of individual attention, discover the particular difficulties of the child, and secure a result that could not possibly be approached under more crowded conditions.

The Curriculum.

The oral teaching is taken with the normal children in the ordinary school with which the myope class is associated. By this means the myopic children are kept up to the standard of knowledge of their normal colleagues, have the benefit of mixing with them in class and the oversight of the regular teachers. There is no difficulty in the arrangement; it is merely a matter of planning a convenient time-table, and the recognition by the teachers in the ordinary school of the particular difficulties of the shortsighted children. It has the added advantage that it keeps before the ordinary teacher the elementary principles of the care of the eyes,

which they are perhaps likely to forget when all the defective children are withdrawn from their care.

The literary work of the children is done in the myope class upon the blackboards provided for each child, and upon the wall-boards. . . . The small script of thin white lines, usually seen on the boards of the ordinary classrooms and in lecture theatres, is quite out of place in these classes. Letters must be large and the chalk lines broad and strong, and to secure this the chalk supplied should be square-edged, and of double the measure of the stock size. The small desk blackboards are marked with white lines two inches apart, and the wall-boards 4 inches apart.

In the higher standards the want of some permanent record of the work of the children was felt; the essentially temporary character of blackboard work did not seem altogether satisfactory; mistakes were so easily corrected that carelessness was engendered. In the higher standards exercise books are being tried of a dictinctly novel pattern. They are made up of large black paper sheets,[1] and the writing is done with white crayon, which gives a record of fair durability, but it can be washed off if desired. The exercise books are clipped onto the desk blackboards, and the writing is done free-arm fashion as though on the blackboard, so that none of the dangers of ordinary writing, such as stooping over the work, are involved. The eldest of the pupils are allowed to make a permanent record of their work by printing. Two sets of printing types are provided for the use of each class. They are rubber-faced, block-letter types, one of 1-inch height, the other of 2-inch height.[2] These are mounted on wooden blocks fitted with lateral pegs and holes, so that they can be joined together to form words. The words are set up and printed upon large sheets of white paper; the record is permanent, and goes to form a class library of scrolls which are useful for subsequent teaching. This device has done away with the necessity of invoking the aid of the professional printer to provide some form of literary matter which could be hung up in the sight of all the children, and read with comfort by even the children in the back row. The printing itself is an admirable training in care and exactness, and is greatly liked by the children; in fact, it becomes one of the prize tasks of the class.

Drill and games enter largely into the time-table, and attempts are made to associate some of the games with the instructional work; *e.g.*, large sheets of scenic canvas[3] are now supplied to two schools that have sufficient floor space, and on these the teachers paint outline maps of different countries, marking out the position of the principal cities, rivers, mountains, etc.; the children walk about on the floor maps pointing with sticks to the different spots and marks, learning their geography

[1] Black paper exercise books are provided by the British and Foreign Blind Association, Great Portland Street, London, W.

[2] The rubber printing blocks are supplied by Mr. E. M. Richford, Snow Hill, London, E. C.

[3] The scenic canvas is obtainable up to 72 inches wide in two qualities: the better is known as long flax canvas, the inferior as jute canvas. It can be had from Messrs. William Good & Son, King William Street, E. C.

by traveling it in miniature. With a teacher of resource such methods of instruction possess endless possibilities of interest.

The most difficult section of the work to arrange is the manual training. Whatever the work done it must be such that the fixed attention of the eyes is not demanded. For that reason all sewing work is prohibited; it has been tried with a few of the elder girls, but was quickly stopped. Knitting, on the other hand, fulfills the necessary conditions; a child that has any aptitude for it soon learns to do it automatically and with little use of the eyes; such children are allowed to practice it. The junior children (both boys and girls) are taught paper folding, stick laying, felt weaving in colors and knitting. The seniors and some juniors are taught modeling maps, rough wood work, where measuring can be done with rulers marked with minimum $\frac{1}{4}$-inch marks. Advanced basket work is taught according to the advanced scheme on workshop principles (but not including raffia work, which is too fine). Bent iron work is satisfactory, particularly for boys; possibly also the netting of hammocks, tennis nets, etc.; for the girls cookery and laundry of a simple kind, just sufficient to give an intelligent insight into the arts of housewifery.

The teaching of manual work to these children is not done with the same object in view that pertains to the teaching of the blind. With the latter the teaching is done with the view of the blind child subsequently earning a living by means of that particular work, — basket-making, mat-making and so forth. With the myopes it is quite different; these crafts are taught merely as a training in attention and care; it is not intended that any of them should enter into competition with the blind in doing these works; for that reason any particular work of this kind is not continued to the point where rapidity and skill are reached.

The scheme of education in view for the myopes is not merely technical but general. Many of these children are of high intelligence, and a good general training, with special attention to the development of thought, initiative, a good bearing, and clear speech free from objectionable accent and idiom, will fit them for positions of usefulness and responsibility of the in and out door type, such as small traders, collectors, agents, visitors, etc. This kind of occupation presents no risk to the eyesight.

The myopes drill in company with the normal children; they are also allowed to play with them so far as possible. But many of these highly myopic eyes are very frail and unnaturally susceptible to injury. To give the teachers guidance in this matter lists are kept of the average and special cases. Those on the special list are limited in their games and drill to the mildest and least risky performances, and during school hours they do not play with the normal-eyed children.

5. Eyesight and Delinquency.

Illustrative case from fourth report of social service work at the Massachusetts Charitable Eye and Ear Infirmary: —

Take, for example, the case of a man, forty-eight years of age, who was sent to us one day, ragged, emaciated, almost helpless without the glasses which had been broken a few days before. His record with the public and private charities of Boston and other cities was a very bad one, — idleness, drink, immorality, neglect of his children. The hospital found a condition of high myopia, which had been corrected only after the man had passed his twenty-fifth year, when he had thoroughly learned the lesson of idleness; and the rest had followed easily. All his life he had been handicapped; in school, where his fellow-pupils who had better vision left him far behind; later, when work was difficult to find and, for him, almost impossible to keep; and later still, after glasses had been found to help the vision, by the habit of idleness and its attendant evils, acquired through little fault of his own. There was no doubt about his very bad record, but the hospital finding left much doubt as to his individual responsibility for it. Though our report could, of course, make no difference in the action of any charitable society in such a case, as present conditions must govern action, it would essentially change the attitude and modify the message to the public in regard to this physical misfit.

The Relationship of Visual Defectiveness and Mental Inadequacy.[1]

The occurrence of the various physical stigmata of degeneracy, *i.e.*, physical defects or anomalies, has been thought to be of somewhat greater frequency among the feeble-minded than among persons fully equipped mentally. Among these physical stigmata are defects of the special senses.

The relationship of mental and visual defectiveness is not one of cause and effect, generally, but one of association. A marked visual defect is a contributory cause in the inefficiency of an individual, but it is not *per se* a cause of mental enfeeblement, since feeble-mindedness is a congenital defect, or is traceable, almost without exception, to some other accident. While the development of the young is retarded, in some degree at least, by any defect in any of the special senses, yet visual defectiveness is not a direct cause of mental defectiveness.

In judging of the relative frequency of occurrence of visual defectiveness among prisoners on the one hand, and among young males of similar social standing not incarcerated on the other, the fact is not lost sight of that systematic search for the visual defects of prisoners is made and they are discovered, while it may be safely assumed that in the rather

[1] Guy G. Fernald, A.M., M.D.

shiftless class from which prisoners come there are many undiscovered cases of visual defectiveness.

In a small group of cases at the Massachusetts Reformatory a recent classification on the basis of mental status supplies available data for the computation of the relative frequency of visual defectiveness among the mentally well equipped and those less well equipped.

Of the 213 comprising the group, 167 were of "normal" or of "subnormal" grade mentally; *i.e.*, they were regarded as capable of reformation or of supporting themselves honestly. Forty-six, or about 21½ per cent., are classified as so far defective mentally as to be in need of surveillance if they are to be returned to the community. Of the 167, 30, or 18 per cent., had defective vision in one or both eyes, and of the 46 defectives, 14, or 30 per cent., were similarly afflicted. For the purpose of the computation, visual defect is regarded as inability to read the Snellen test type "40" at 20 feet with at least one eye, *i.e.*, a visual defect of twenty-fortieths or one-half.

It will be observed that in classifying both as to mental ability and visual acuity, an arbitrary line of demarcation is drawn, and it follows, of course, that a variation of this line in either of these groups would disturb the relationships quoted. Furthermore, the size of the group is too small to admit of definite conclusions being drawn. Hence these findings are of comparatively little value as demonstrations. All that can be claimed is that there is an apparent tendency.

From the Massachusetts Reformatory Records, 1913.

There were 578 arrivals in the year. Among these, 110 cases of eye trouble were found at the time of the physical examination on arrival, all of which were referred to an optometrist for the correction of errors of refraction, or were treated by an ophthalmologist.

Number having markedly defective vision ($\frac{2}{8}\frac{0}{0}$, or $\frac{1}{4}$): —

In one eye only,	38
In both eyes,	31
Total,	69

Seven of these were found not to require lenses. None were totally blind. Six were sent to the Massachusetts Eye and Ear Infirmary for a specialist's advice, and one is listed to be sent there.

This group is distinct from that forming the basis of the computation accompanying, and is submitted simply to give information of possible interest to the commission. It should

shiftless class from which prisoners come there are many undiscovered cases of visual defectiveness.

In a small group of cases at the Massachusetts Reformatory a recent classification on the basis of mental status supplies available data for the computation of the relative frequency of visual defectiveness among the mentally well equipped and those less well equipped.

Of the 213 comprising the group, 167 were of "normal" or of "subnormal" grade mentally; *i.e.*, they were regarded as capable of reformation or of supporting themselves honestly. Forty-six, or about 21½ per cent., are classified as so far defective mentally as to be in need of surveillance if they are to be returned to the community. Of the 167, 30, or 18 per cent., had defective vision in one or both eyes, and of the 46 defectives, 14, or 30 per cent., were similarly afflicted. For the purpose of the computation, visual defect is regarded as inability to read the Snellen test type "40" at 20 feet with at least one eye, *i.e.*, a visual defect of twenty-fortieths or one-half.

It will be observed that in classifying both as to mental ability and visual acuity, an arbitrary line of demarcation is drawn, and it follows, of course, that a variation of this line in either of these groups would disturb the relationships quoted. Furthermore, the size of the group is too small to admit of definite conclusions being drawn. Hence these findings are of comparatively little value as demonstrations. All that can be claimed is that there is an apparent tendency.

From the Massachusetts Reformatory Records, 1913.

There were 578 arrivals in the year. Among these, 110 cases of eye trouble were found at the time of the physical examination on arrival, all of which were referred to an optometrist for the correction of errors of refraction, or were treated by an ophthalmologist.

Number having markedly defective vision ($\frac{2}{8}\frac{0}{0}$, or $\frac{1}{4}$): —

In one eye only,	38
In both eyes,	31
Total,	69

Seven of these were found not to require lenses. None were totally blind. Six were sent to the Massachusetts Eye and Ear Infirmary for a specialist's advice, and one is listed to be sent there.

This group is distinct from that forming the basis of the computation accompanying, and is submitted simply to give information of possible interest to the commission. It should

ONCE UPON A TIME THERE WERE THREE BEARS. THEY LIVED IN A HOUSE OF THEIR OWN IN THE WOODS. ONE OF THE BEARS WAS A GREAT BIG BEAR. HE WAS THE FATHER. ONE OF THEM WAS A MIDDLE-SIZED BEAR. SHE WAS THE MOTHER. ONE OF THEM WAS A TINY LITTLE BEAR. HE WAS THE BABY. THESE BEARS HAD BOWLS FOR THEIR SOUP. THERE WAS A

Possible Type for Use in School Books for Children with Seriously Defective Eyesight.

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BABY. THE
FOR THEIR

be noted that the group of 110 cases above comprises not only those having visual defects, but includes all having eye troubles and, further, that cases referred to the optometrist often have an index of twenty-thirtieths. This being the case, these two groups are not comparable. Furthermore, the 578 arrivals have not yet been classified as to mental status.